

REMARKS

By this Amendment, claims 1-5, 7 and 9-15 are amended. Claims 6 and 8 remain in the application. Thus, claims 1-15 are active in the application. Reexamination and reconsideration of the application are respectfully requested.

The Applicants note that the Examiner incorrectly checked item 12(b) on the Office Action Summary form, indicating that only some of the certified copies of the foreign priority documents of the application have been received. However, this application only claims priority to a single foreign application (Japanese Patent Application No. 2002-204632, filed July 6, 2000), as acknowledged in the Declaration and as claimed in the Claim of Priority. Accordingly, the Applicants respectfully request the Examiner to properly acknowledge the receipt of the certified copy of the foreign priority document.

The specification and abstract have been carefully reviewed and revised in order to correct grammatical and idiomatic errors in order to aid the Examiner in further consideration of the application. The amendments to the specification and abstract are incorporated in the attached substitute specification and abstract. No new matter has been added.

Also attached hereto is a marked-up version of the substitute specification and abstract illustrating the changes made to the original specification and abstract.

On page 1 of the Office Action, the title of the invention was objected to as not being descriptive. In particular, the Examiner objected to the use of the term “the same” in the title, and asserted that it was not clear what was meant by this term. Accordingly, the Examiner required a new title of the invention which is clearly indicative of the invention to which the claims are directed. In view of this requirement, the title of the invention has been revised to “Streaming Method and System For Executing the Streaming Method.” The Applicants submit that the new title of the invention is clearly indicative of the invention to which the claims are directed. Accordingly, the Applicants respectfully request the Examiner to withdraw the objection to the title of the invention.

Replacement formal drawings of Figures 1-21 are submitted concurrently herewith under a separate cover letter in order to include reference numerals which were omitted from original Figure 19B. In particular, the original specification, beginning at

line 4 on page 4, describes times t1, t2 and t3 with regard to when video frames begin to head for the video buffer and when the video frames begin to be decoded. However, the times t1, t2 and t3 were not included in the original Figure 19B. Accordingly, a replacement formal drawing of Figure 19 is submitted herewith to properly illustrate the times t1, t2 and t3 in Figure 19B. The Applicants note that a proposed drawing amendment of Figure 19 was filed with the application on July 5, 2001. The replacement formal drawing of Figure 19 incorporates the revisions to Figure 19 which were made in the proposed drawing amendment of Figure 19. The Applicants submit that no new matter was added via this revision to Figure 19. Accordingly, approval of the replacement formal drawings is respectfully requested.

On page 2 of the Office Action, claims 1 and 11-15 were objected for including the limitation "receiving the same." Similar to the Examiner's objection to the title of the invention, the Examiner asserted that it is not clear what is meant by the limitation "the same." Accordingly, claims 1 and 11-15 have each been amended in order to more clearly recite each limitation. In particular, the preambles of each of claims 1 and 11-15 have been amended to more definitely recite that the terminal plays back the stream data while receiving "the stream data" from the server. In view of these amendments to claims 1 and 11-15, the Applicants respectfully request the Examiner to withdraw the objections to claims 1 and 11-15.

On page 3 of the Office Action, claims 1-15 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention. In particular, the Examiner asserted that the terms such as "target value," "first threshold," and "second threshold" are recited in the claims but not adequately defined in the specification. The following is an explanation of these terms and any amendments made to the original specification to more clearly define the terms recited in the claims.

(1) Target value

Paragraph [0071] of the original specification, beginning at line 25 on page 28, has been amended in order to clarify what is meant by the term "target value." It is apparent from paragraph [0064] that the term "target value" refers to the parameter "S_target." Paragraph [0071] has been amended to define that "the parameter S_target

(target value) is, in the essential sense, a reference value for streaming playback to be started. With the parameter S_target, streaming playback can be continuously and normally performed under the condition that the buffer occupancy of the terminal changes in the vicinity of the parameter S_target.” Accordingly, the Applicants respectfully submit that the term “target value,” as recited in the claims, is adequately defined in the specification.

(2) First threshold value and Second threshold value.

Paragraphs [0093] and [0094] of the original specification were amended in order to clarify the meaning of the terms “first threshold value” and “second threshold value.”

Paragraph [0093] has been amended as follows:

[0093] Immediately after the field intensity changes from “high” to “medium”, the terminal 102 moving as such determines that the transmission capacity of the network 103 has changed and exceeded a threshold value A (first threshold value), and thus determines a new S_target. Immediately after the field intensity changes from “medium” to “low”, the terminal 102 determines that the transmission capacity of the network 103 has changed and exceeded a threshold value B (second threshold value), and a new S_target is determined. On the other hand, immediately after the field intensity changes from “low” to “medium”, the terminal 102 determines that the transmission capacity of the network 103 has changed and exceeded the threshold value B (second threshold value), and thus determines a new S_target. Immediately after the field intensity changes from “medium” to “high”, the terminal 102 determines that the transmission capacity of the network 103 has changed and exceeded the threshold value A (first threshold value), and a new S_target is determined.

Similar amendments were made to paragraph [0094] as well as paragraphs [0139]-[0141]. Accordingly, the term “first threshold value” refers to the threshold value A for use in detecting that the field intensity has changed to “medium,” and the term “second threshold value” refers to the threshold value B for use in detecting that the field intensity has changed to “low.”

The Applicants submit that no new matter was added via the above-described revisions to the original specification.

(3) Predetermined threshold value

The term “predetermined threshold value,” as recited in claim 4, is a collective term which covers at least two threshold values for use in detecting changes of the

transmission capacity. That is, the term “predetermined threshold value” encompasses both the “first threshold value” and the “second threshold value.”

On pages 3-4 of the Office Action, claim 5 is further rejected under 35 U.S.C. § 112, second paragraph. In particular, the Examiner construed claim 5 to mean “the transmission capacity of the network goes beyond a first threshold value,” instead of meaning “the transmission capacity falls short of a first threshold value.”

The Applicants respectfully submit that the Examiner’s construction of claim 5 is incorrect in light of the disclosure of the application. Paragraphs [0098] and [0139]-[0143] of the original and substitute specifications describe changes of field intensity due to the handover and threshold values which are associated with the changes.

For example, paragraph [0098] of the original specifications reads “if the terminal 102 moves along the arrow 702 of FIG. 7A, according to the change of [the] field intensity, the terminal 102 changes the value of the parameter S_target as S_target1 [256kb] → S_target2 [348kb] → S_target3 [128kb] → S_target2 [348kb] → S_target1 [256kb].” Referring to Figure 7A, the field intensity decreases (i.e., the transmission capacitance of the network) as the terminal 102 moves away from the relay station in the direction of the arrow 702. In this case, the terminal 102 increases the target value (S_target) from S_target1 (256kb) to S_target2 (384kb).

In view of the above, the Applicants respectfully request the Examiner to interpret claim 5 according to its plain meaning.

On page 4 of the Office Action, claims 1-15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ravi et al. (U.S. 6,292,834) in view of Chujoh et al. (U.S. 6,002,802). This rejection is respectfully traversed for the following reasons.

The present invention provides a streaming method, a streaming method system, and a program for performing the streaming method in which a server transmits stream data over the network, and the terminal plays back the stream data while receiving the stream data from the server.

The system and method of the present invention are based on a kind of push streaming technology. The server is notified of a determined target value and a determined delay time from when the terminal writes head data of the stream data to the buffer of the terminal to when the terminal reads the data to start playback. Accordingly,

the server is notified by the terminal of a preroll time which is required for the terminal to decode audio-visual data, and the server simulates the capacity that is to be consumed by decoding the data. As such, the server estimates the amount of data that is stored in a buffer of the terminal device, and determines the amount of subsequent data to be transmitted.

Further, in the system and method of the present invention, the terminal recognizes the network transmission rate based on a radio-frequency field intensity, and the network transmission rate is not calculated based on the amount of data that is delivered to and stored in the buffer of the terminal or a playtime embedded in the data.

As recited in claims 1 and 12-14, in the terminal, the method comprises determining a target value of the stream data to be stored in a buffer of the terminal in relation to a buffer capacity of the terminal and a transmission capacity of the network. In the terminal, the method comprises arbitrarily determining, in a range not exceeding a value obtained by dividing the buffer capacity by the transmission capacity, a delay time from when the terminal writes head data of the stream data to the buffer to when the terminal reads the data to start playback. Further, in the terminal, the method of claims 1 and 12-14 comprises notifying the server of the determined target value and the determined delay time. In the server, the method of claims 1 and 12-14 comprises controlling a transmission speed based on the notified target value and the notified delay time when the server transmits the stream data to the terminal over the network.

Claim 15 recites a program which causes the terminal and server to perform the method elements as recited in each of claims 1 and 12-14.

Claim 11 recites the system of the present invention which includes the server and the terminal as described above. As recited in claim 11, the terminal comprises target value determination means for determining a target value of stream data to be stored in a buffer of said terminal in relation to a buffer capacity of said terminal and a transmission capacity of the network. The terminal of claim 11 also comprises delay time determination means for arbitrarily determining, in a range not exceeding a value obtained by dividing the buffer capacity by the transmission capacity, a delay time from when said terminal writes head data of the stream data to the buffer to when said terminal reads the data to start playback. Further, the terminal of claim 11 also comprises

notifying means for notifying the server of the target value determined by said target value determination means and the delay time determined by said delay time determination means. As recited in claim 11, the server comprises control means for controlling a transmission speed based on the notified target value and the delay time when transmitting the stream data to said terminal over the network.

Ravi et al. discloses a kind of pull streaming technology in which a terminal device (client computer) 240 checks the amount of data that is delivered to a buffer in the terminal device and a playtime of the buffer at regular intervals. The terminal device 240 calculates the network transmission rate before requesting a server 220 to control the network transmission rate so as to increase the amount of data that is transmitted from the server to the terminal device 240 (see Column 6, lines 32-44 and Column 6, line 63 to Column 7, line 5).

However, as described above, the claimed invention is directed to a push streaming technology, not a pull streaming technology. In the claimed invention, the server is notified by the terminal of a preroll time which is required for the terminal to decode audio-visual data, and the server simulates the capacity that is to be consumed by decoding the data. As such, the server estimates the amount of data that is stored in a buffer of the terminal device, and determines the amount of subsequent data to be transmitted.

Moreover, in contrast to Ravi et al., the terminal, as described above, recognizes the network transmission rate based on a radio-frequency field intensity, and the network transmission rate is not calculated based on the amount of data that is delivered to and stored in the buffer of the terminal or a playtime embedded in the data.

In addition, as acknowledged by the Examiner, Ravi et al. clearly does not disclose or suggest arbitrarily determining, in a range not exceeding a value obtained by dividing the buffer capacity by the transmission capacity, a delay time from when the terminal writes head data of the stream data to the buffer to when the terminal reads the data to start playback, as recited in claims 1 and 11-15.

To teach this feature, the Examiner applied Chujoh et al, which discloses a server including a means for encoding audio-visual data and a system for transmitting data to a network. Chujoh et al. discloses that if the network transmission rate is decreased, a

quantization parameter is adjusted (increasing/decreasing the encoding picture quality) to change the amount of data to be transmitted.

However, in contrast to Chujoh et al., data is not distributed in the claimed invention while performing real-time encoding. Instead, encoded data that is stored in the storage of the server is transmitted to the terminal on demand.

Further, in Chujoh, if the encoding picture quality is changed based on a quantization parameter, the content data itself is changed. In the claimed invention, however, the transmission rate is adjusted by transmitting a portion of the content data that is stored in the server, rather than the entire content data, and the content data is not itself changed.

Accordingly, the Applicants respectfully submit that the Examiner's reliance on Column 8, lines 17-35 and Column 9, lines 23-36 of Chujoh et al. to modify Ravi et al. is misplaced, since the combination of Ravi et al. and Chujoh et al. teaches away from the claimed invention. That is, a combination of Ravi et al. and Chujoh et al. clearly results in changing the content data that is to be transmitted from the server to the terminal, whereas in the inventions of claims 1 and 11-15, a portion of the content data that is stored in the server, rather than the entire content data, is transmitted, and the content data is not itself changed.

Therefore, despite the Examiner's assertion to the contrary, it would not have been obvious to one of ordinary skill in the art to modify and combine Chujoh et al. with Ravi et al. to result in the inventions of claims 1 and 11-15 since a combination of Chujoh et al. with Ravi et al. teach away from the inventions of claims 1 and 11-15.

For *prima facie* obviousness under 35 U.S.C. § 103(a), the references must suggest each and every limitation. The Examiner is respectfully reminded that an obviousness rejection cannot be based on the resort of the Examiner to various non-pertinent references and the combination of *bits and pieces of the references* in light of the Applicants' teachings.

As described above, the combination of Ravi et al. and Chujoh et al. teach away from the inventions of claims 1 and 11-15. Moreover, as clearly set forth in *Aqua-Aerobic Systems, Inc. v. Richards of Rockford, Inc.*, 1 U.S.P.Q.2d 1945, 1955-57 (N.D. Ill. 1986 (citing *In re Gordon*, 733 F.2d 900, 902, 221 U.S.P.Q. 1125 (Fed Cir. 1984), the

fact that prior art references can be modified to show a claimed invention does not make the modification obvious unless the prior art references *suggest the desirability* of the modification. The Applicants submit that no suggestion to modify or combine the teachings of Ravi et al. and Chujoh et al. were found in either of these references.

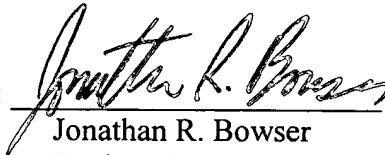
Therefore, the Applicants respectfully submit that claims 1 and 11-15, as well as claims 2-10 which depend therefrom, are clearly allowable over Ravi et al. and Chujoh et al.

In view of the foregoing amendments and remarks, it is respectfully submitted that the present application is clearly in condition for allowance. An early notice thereof is respectfully solicited.

If, after reviewing this Amendment, the Examiner feels there are any issues remaining which must be resolved before the application can be passed to issue, the Examiner is respectfully requested to contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

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AMENDMENTS TO THE DRAWINGS

Replacement formal drawings of Figures 1-21 are submitted concurrently herewith under a separate cover letter.